Volume 9 Issue 1 (2025) Pages 218-228
**Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini**
ISSN: 2549-8959 (Online) 2356-1327 (Print)

# Effectiveness of Blended Learning Model Based on Character Education in Enhancing Children's Critical Thinking Skills in Islamic Religious Education

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DOI: 10.31004/obsesi.v9i1.6874

## Abstract
This study aims to determine the effectiveness of a character education-based blended learning model to improve Children' critical thinking skills in Islamic religious education. This research is quantitative research with a meta-analysis approach. The criteria for study eligibility are research obtained through google scholar; Researchgate, ERIC, ScienceDirect and Emerald; research comes from Sinta and Scopus indexed journals or proceedings; Research should be relevant to the effectiveness of character education-based blended learning models to improve Children' critical thinking skills in Islamic religious education; The study was published in 2020-2024 and reported complete values to calculate the value of effect size. Statistical analysis with JASP 0.8.5 application. The results concluded a) the study concluded 20 studies with normal and heterogeneous distribution; b) there is a significant influence of the character education-based blended learning model to improve Children' critical thinking skills in Islamic religious education with strong categories ($rE = 0.851$; $p < 0.001$), and c) there is no publication bias. This finding explains that the blended learning model based on the character education-based blended learning model is effective for improving Children' critical thinking skills in Islamic religious education.

**Keywords:** Blended learning; Character Education; Critical thinking; PAI



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Received 10 December 2024, Accepted 10 February 2025, Published 10 February 2025

## Introduction

Islamic Religious schools (PAI) are highly valued in the Indonesian educational system (Paradise & Fatah, 2013; Uyuni &; Adnan, 2021), especially in building Children' ethics and morals (Boonsuk &; Assalihee, 2023). Islamic education helps Children understand Islamic teachings intellectually and also teaches them how to implement them in their daily lives (Jamilah, 2021; Talhouni, 2021). Islamic religious education is to create a generation of Muslims who are moral, intelligent, and able to contribute positively to society (Suparjo et al., 2021; Muhajir et al., 2022). Additionally, Islamic Religious Education develops Children' capacity for critical thought while they are studying.

To deal with the repercussions of the industrial revolution, Children need to be able to think critically. 4.0: Moving Towards the Industrial Revolution 5.0 (Elfira et al., 2023; Maison et al., 2022;Warsah et al., 2021). Pupils with critical thinking skills are more able to evaluate

DOI: 10.31004/obsesi.v9i1.6874
information or situations objectively and logically in order to draw the appropriate conclusions (Yulitriana et al., 2023; Santyasa et al., 2021; Chimmalee & Anupan, 2023). Children that possess critical thinking skills may also solve problems, create opinions, and choose trustworthy sources of information from the present digital age (Jiang, 2022; Attallah et al., 2022). Children with critical thinking skills are taught how to solve problems (Zulyusri et al., 2023; Palavan, 2020; Hamengkubuwono et al., 2016).

But in reality, Children' critical thinking skills during Islamic Religious Education continue to be rather low (Ichsan et a., 2023; Priyambodo et al., 2023). It is often recognized that Children find it difficult to identify and draw the proper conclusions when learning Islamic Religious Education (Fauziyah &; Badrussalam, 2023; Ajmain, 2020). Additionally, as per the findings of the 2018 Trends in International Mathematics and Science Study (TIMSS), Indonesian Children achieved a score of 396 out of 500 in critical thinking skills, which falls below the global average score for Children (Hariyadi et al., 2023; Setiawan et al., 2022). Moreover, there has been a lack of implementation among educators in integrating a paradigm within the PAI learning process that fosters critical thinking among Children (Ahmad &; Syafii, 2020). Teachers within the PAI Learning domain are not utilizing technology that could potentially aid Children in enhancing their critical thinking skills (Primadoniati et al., 2020). Consequently, it is crucial to have a learning model that can facilitate the development of Children' critical thinking skills.

Blended learning is identified as a teaching approach in Islamic religious education that holds promise for fostering the enhancement of Children' critical thinking abilities (Mahfudz et al., 2023). Research results Hasanah et al.,(2020). Utilizing the blended learning approach can enhance Children' communication skills and critical thinking abilities. Blended learning combines traditional face-to-face teaching in a physical classroom with online and digital learning through digital platforms (Radulovic et al., 2023; Ko et al., 2023). Blended learning presents the opportunity to create a more immersive and interactive learning environment (Fandhi et al., 2023). Blended learning enables Children to access various resources such as videos, e-learning modules, and online forums, allowing them to tackle challenges and prepare before interacting with teachers and peers in traditional classroom settings for practical application. (Jehad et al., 2023; Adarkwah &; Huang, 2023; Islam et al., 2023). Anhwere et al., (2023). Blended learning enables customized learning experiences and broadens the availability of educational resources, unrestricted by conventional time or location limitations

Moreover, the integration of character education and holistic learning collaborates to optimize Children' academic capabilities. Character education encompasses a structured approach to instilling admirable qualities such as adab and noble morals in Children (Badeni, 2021). The goal of character education is to help kids understand how to establish excellent character (Jamaluddin et al., 2022; Marini et al., 2018). The incorporation of character education into Islamic religious education can yield significant advantages. By focusing on character development, Children are immersed in learning experiences that emphasize noble values and cultural principles. Therefore, the latest educational approach that holds promise for enhancing Children' critical thinking skills is integrated learning grounded in character education (Dewanto et al., 2023; Luciana et al., 2024; Nurtamam et al., 2023).

Previous research from various Indonesian studies has suggested that employing blended learning strategies is effective in enhancing Children' critical thinking skills (Suryono et al., 2023; Rahmatan et al., 2022; Yennita &; Zukmadini, 2021; Denny et al., 2020; Saekawati &; Nasrudin, 2021). Furthermore, research conducted outside of Indonesia also demonstrates that blended learning contributes to the enhancement of Children' critical thinking skills (Jou, 2021; Lu et al., 2021). In numerous studies on the blended learning model, the effect size of blended learning grounded in character education for acquiring Islamic religious education has not been extensively explored. To bridge this gap and attain a comprehensive understanding of blended learning, a meta-analysis is necessary (Yıldırım et al., 2022).

DOI: 10.31004/obsesi.v9i1.6874

Therefore, the aim of this study is to assess the effectiveness of the blended learning model incorporating character education in improving Children' critical thinking skills within the context of Islamic religious education.

## Methodology

This research constitutes a meta-analysis study, which is a methodological approach that gathers and scrutinizes previous primary data to derive statistically precise and comprehensive conclusions (Balemen, 201; Tamur et al., 2020; Ozturk et al., 2022). The aim of this meta-analysis is to determine the effectiveness of the blended learning approach grounded in character education in improving Children' critical thinking skills within the domain of Islamic religious education.

To collect relevant data for this research, searches will be conducted on platforms such as ResearchGate, ERIC, ScienceDirect, and Emerald databases via Google Scholar. The search process will utilize specific keywords including "blended learning," "character education-based blended learning," and "impact of character education-based blended learning on Children' critical thinking abilities."

To obtain valid and reliable data in the meta-analysis should establish research inclusion criteria (Chamdani et al., 2022). The inclusion criteria for this meta-analysis encompass research published in Sinta and Scopus indexed journals or proceedings, as well as studies available on ResearchGate, ERIC, ScienceDirect, and Google Scholar. Specifically, the focus will be on research investigating the effectiveness of blended learning models grounded in character education for improving Children' critical thinking skills in Islamic religious education. Moreover, selected studies must provide all necessary data to evaluate the magnitude of the effects and must have been published between 2020 and 2024.

Twenty papers that satisfied the inclusion criteria for this meta-analysis were found and coded. Data coding is accomplished by summarising the features of research using meta-analyses. (Tamur et al., 2021; Juandi et al., 2021). The results of data coding can be seen in Table 1.

**Table 1. Data Coding**

| Group | Code |
|---|---|
| **Study** | Researcher/ (Year of Publication) |
| **Blended Learning** | Blended learning (general), Online Learning, E-learning |
| **Learning outcomes** | Critical Thinking |
| **Content Area** | Islamic Education |
| **Grade Level** | Elementary School, Junior School, High School, College |
| **Primary Research report type** | Articles in the form of international journals or prodising indexed by SINTA, Scopus and unpublished dissertations |
| **Location Area** | Indonesia and Abroad |
| **Meta-analysis Quality** | Small, Medium and Large |
| **Publication Years** | 2020-2023 |

In meta-analysis studies, data analysis involves determining the effect size value for each study (Glass, 2015). Effect size refers to the impact of character education-based blended learning on Children' critical thinking abilities (Borenstein et al., (2009). The statistical analysis procedure in the meta-analysis includes several steps: 1) determining the effect size value of the primary study, 2) assessing heterogeneity and estimation models, 3) examining publication bias, and 4) calculating the p-value to test the hypothesis. Statistical analysis was conducted using JSAP 0.8.5 software. Furthermore, the criteria for the effect size value are guided by Thaleimer & Cook (2002) can be seen in Table 2.

DOI: 10.31004/obsesi.v9i1.6874

**Table 2. Effect Size Value Criteria**

| Effect Size | Criterion |
|---|---|
| **Between -0.15 and 0.15** | No Effect |
| **Between 0.15 and 0.40** | Small Effect |
| **Between 0.40 and 0.75** | Moderate Effect |
| **Between 0.75 and 1.10** | Large Effect |
| **Between 1.10 and 1.45** | Very large effect |
| **1.45 or higher** | Amazing effect |

In this meta-analysis, publication bias is assessed through the utilization of the funnel plot method and the Rosenthal Fail-Safe N (FSN) Test (Diah et al., 2022; Suparman et al., 2021). It was concluded that the study was not affected by a symmetrical spread of effect sizes along the vertical line (Yıldırım, 2022). However, if the effect sizes do not display symmetrical spreading along the vertical line, the Rosenthal Fail-Safe N (FSN) test is conducted. Furthermore, in publication bias-resistant meta-analysis, the research is considered robust if the FSN value exceeds 5K + 10. (Utomo et al., 2023).

## Result and Discussion

According to the findings from the data search on Google Scholar, a total of 20 studies meeting the inclusion criteria were identified through ResearchGate, ERIC, ScienceDirect, and Emerald. Effect size and standard error values were calculated for the data meeting the inclusion criteria, and the outcomes are presented in Table 3.

**Table 3. Effect Size and Standard Error for Every Study**

| Code Studies | Year | Effect Size | Standard error | Bound Variables |
|---|---|---|---|---|
| **Study 1** | 2023 | 1.30 | 0.42 | Critical Thinking |
| **Study 2** | 2023 | 2.06 | 0.51 | Critical Thinking |
| **Study 3** | 2023 | 1.17 | 0.59 | Critical Thinking |
| **Study 4** | 2021 | 0.73 | 0.28 | Critical Thinking |
| **Study 5** | 2021 | 0.86 | 0.30 | Critical Thinking |
| **Study 6** | 2023 | 1.15 | 0.42 | Critical Thinking |
| **Study 7** | 2020 | 2.21 | 0.63 | Critical Thinking |
| **Study 8** | 2021 | 0.92 | 0.42 | Critical Thinking |
| **Study 9** | 2020 | 1.10 | 0.40 | Critical Thinking |
| **Study 10** | 2022 | 0.73 | 0.25 | Critical Thinking |
| **Study 11** | 2023 | 0.47 | 0.22 | Critical Thinking |
| **Study 12** | 2022 | 0.39 | 0.16 | Critical Thinking |
| **Study 13** | 2021 | 0.28 | 0.12 | Critical Thinking |
| **Study 14** | 2023 | 0.97 | 0.33 | Critical Thinking |
| **Study 15** | 2022 | 1.16 | 0.54 | Critical Thinking |
| **Study 16** | 2022 | 1.83 | 0.62 | Critical Thinking |
| **Study 17** | 2023 | 0.88 | 0.40 | Critical Thinking |
| **Study 18** | 2023 | 0.65 | 0.29 | Critical Thinking |
| **Study 19** | 2021 | 0.59 | 0.21 | Critical Thinking |
| **Study 20** | 2023 | 1.28 | 0.38 | Critical Thinking |

Table 3, effect size values from 20 studies ranged from 0.28 to 2.21. According to Thaleimer & Samanta Cook effect size criteria, (2002). Remarkable effect size values were observed across the board: two studies met the criteria for a small effect size (10%), five for a medium effect size (25%), five for a large effect size (25%), four for a very large effect size (20%), and four for an effect size (20%). Subsequently, tests for heterogeneity were conducted,

DOI: 10.31004/obsesi.v9i1.6874

and estimation models were identified to analyze the 20 studies. Table 4 presents the results of the heterogeneity test utilizing fixed and random effect models.

**Table 4. Heterogeneity Test Results**

| | Q | Df | p |
|---|---|---|---|
| **Omnibus test of Coefficients Model** | 68.994 | 1 | < 0.001 |
| **Test of Residual Heterogeneity** | 42.146 | 19 | < 0.001 |

Note: p-value are promaximate
Note : The Model Estimated Restricted ML Methods

Table 4, indicates a heterogeneous distribution of effect sizes, as evidenced by the heterogeneity test results showing a value of Q = 68,994, which surpasses 42,146, and a p-value of < 0.001. Additionally, the random effect model was employed as the estimation model to analyze the 20 investigations. Subsequently, the Rosenthal Fail-Safe N test was conducted, and publication bias was assessed using the funnel plot. (Borenstein et al., 2007; Chamdani et al., 2022; Janiszewski et al., 2019). The results of checking publication bias with funnel plots can be seen in Figure 1.
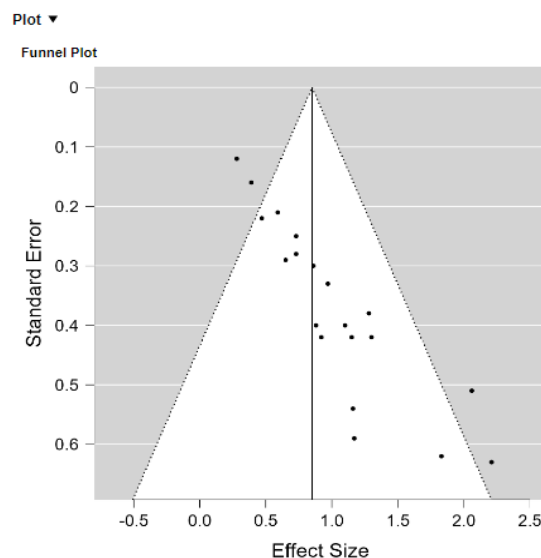
**Figure 1**. **Funnel Plot Random Effect Model**

Figure 1, Determining whether the funnel plot is symmetrical or asymmetric poses a challenge when presenting the results of the 20 effect size study. Therefore, it is necessary to conduct the Rosenthal Fail-Safe N test, as displayed in Table

**Table 5. Rosenthal Fail Safe N**

| **File Drawer Analysis** | | | |
|---|---|---|---|
| | Fail safe N | Target Significance | Observed Significance |
| **Rosenthal** | 1069.000 | 0.050 | < 0.001 |

Table 5, 1069 Rosenthal fail safe test result with p < 0.001 and significance values > 0.050. The 20 effect sizes that were examined are resistive to publication because the Rosenthal Fail Safe N value of 1069 > 5K + 10. The average value of the 20 effect sizes, as shown in Table 6, should then be determined.

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**Table 6. Summary/Mean Effect Size**

| | | | | | 95 % CI | |
|---|---|---|---|---|---|---|
| | Effect size | Standard Error | z | p | Lower | Upper |
| **Intercept** | 0.851 | 0.102 | 8.306 | < 0.001 | 0.650 | 1.051 |

Table 6, shows that the mean impact size of 0.851 falls into the big effect size group, and the confidence interval value of 95% lower 0.650 and upper is 1.051. The Z test count results indicate a p value of less than 0.001 and a significant value of 8.306. According to these results, Children' critical thinking abilities in Islamic religious education can be enhanced by using a blended learning approach focused on character education.The results indicate that employing a character education-based blended learning approach significantly enhances Children' critical thinking skills in the context of Islamic religious education. The average effect size value (ES = 0.851), with z = 8.306 and p < 0.001, supports this conclusion. These findings align with previous research. Hasna &; Saputra (2021). Integrated learning in Islamic religious education proves to be highly effective in improving Children' critical thinking skills. Blended learning grounded in character education requires Children to engage actively and analytically in problem-solving processes. (Komalasari et al., 2023). Moreover, utilizing blended learning to comprehend Islamic religious education fosters curiosity and cultivates critical thinking skills (Bachtiar &; Sunubi, 2022; Luciana et al., 2024; Dewanto et al., 2023).

Furthermore, when blended learning prioritizes student character education, children engage in more creative learning experiences and are encouraged to develop their character. Blended learning involves a combination of in-person instruction and online learning via the interne. (Tong et al., 2022; Timmermann et al., 2023),Islamic religious education employs a blended learning method founded on character education to foster Children' independent learning. This approach emphasizes the development of higher-order thinking skills. Moreover, character education-based teaching, emphasizing accountability, honesty, and logical reasoning, can enhance Children' critical thinking skills. In Islamic religious education, character education-based learning proves to be a highly effective approach for enhancing Children' 21st-century thinking abilities (Taufik, 2020; Azis et al.., 2023).

Blended learning, centered on character education, can enhance Children' learning confidence by instilling moral principles. Through instructor demonstration, engaging discussions, and self-reflection activities based on real moral encounters, Children' ethical values are nurtured (Fuji & Renita, 2023; Kurnanto et al., 2023). he blended learning model, integrating both traditional classroom instruction and virtual learning approaches, creates a more immersive and holistic learning atmosphere. This model is expected to provide a comprehensive learning journey by merging the technological advancements of information technology with the core values of character education within the context of Islamic religious education. (Saihu et al., 2022). Utilizing technological integration to acquire knowledge of Islamic characters can create an interactive learning setting, motivating Children and broadening their understanding of Islamic moral and ethical values (Ali et al., 2024; Wantu et al., 2024).

The aim of this model is to equip Children with the skills to critically analyze, evaluate, and synthesize information, enabling them to understand religious concepts within the context of Islamic religious education(Siregar, 2021). Additionally, this study has the potential to contribute to the development of innovative teaching approaches for Islamic religious education, providing guidance to educators and Children on enhancing the quality of character education within classroom settings. (Muhaemin et al., 2023).

## Conclusion

Based on the findings of the meta-analysis, it can be concluded that: a) the 20 studies exhibited a normal and heterogeneous distribution; b) the blended learning model

incorporating character education significantly impacts Children' critical thinking skills in Islamic religious education, particularly in strong categories (rE = 0.851; $p < 0.001$); and c) there is no evidence of publication bias. These results underscore the effectiveness of the blended learning model based on character education in enhancing Children' critical thinking abilities in Islamic religious education. The study suggests that when integrated with Islamic religious education, the blended learning model focused on character education contributes to Children' development as proficient critical thinkers. By incorporating technology into Islamic religious education and emphasizing moral and ethical principles, this approach fosters an engaging learning environment and promotes the enhancement of Children' critical thinking skills in the classroom. The development of interactive and engaging online learning materials that promote active learning and critical thinking skills is crucial. This can include incorporating case studies, simulations, and interactive quizzes. Furthermore, regular face-to-face interactions between teachers and students are essential to provide personalized feedback, address individual learning needs, and foster a supportive learning environment. Finally, continuous professional development programs for teachers on the effective implementation of blended learning models and the integration of character education are necessary to ensure the successful and sustainable application of this approach in Islamic Religious Education.

## Acknowledgments

The author would like to thank the researchers who have contributed to this study.

## References

Adarkwah, M. A., & Huang, R. (2023). Blended learning for the " multi-track " undergraduate students in Ghana in an adverse era. *Scientific African*, *21*, 1–13. https://doi.org/10.1016/j.sciaf.2023.e01772

Ahmad, I. F., & Syafii, A. (2020). Trends in the Implementation of Higher-Order Thinking Skills in Islamic Religious Education in Madrasahs and Schools : A Systematic Literature Review. *Jurnal Pendidikan Islam*, *9*(2), 195–216. https://doi.org/10.14421/jpi.2020.92.195-216

Ajmain, T. (2020). Islamic Education Teacher ' s Critical Thinking Practice and its Challenges in Enhancing 21 st Century Learning Skills. *International Journal of Psychosocial Rehabilitation*, *24*(5), 1–9. https://doi.org/10.37200/IJPR/V24I5/PR201770

Al-talhouni, M. H. (2021). *The Perceptions of the Teachers of Islamic Education in Jordan Concerning the Use and the Challenges of Darsak Platform*. *10*(6), 23–37. https://doi.org/10.5539/jel.v10n6p23

Ali, M., Nurhayati, R., Wantu, H. M., Amri, M., & Santosa, T. A. (2024). The Effectiveness of Jigsaw Model Based on Flipped Classroom to Improve Students ' Critical Thinking Ability in Islamic Religious Education Learning. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *8*(5), 1069–1078. https://doi.org/10.31004/obsesi.v8i5.6190

Anhwere, K., Arkorful, V., Appiah, F., Manu, E., & Acheampong, E. (2023). Heliyon The impact of blended learning on students using the IBOX platform : Initial perspectives of teachers. *Heliyon*, *9*(3), e14297. https://doi.org/10.1016/j.heliyon.2023.e14297

Attallah, D. M., & Oncology, S. (2022). The Acquired Critical Thinking Skills , Satisfaction , and Self Confidence of Nursing Students and Staff Nurses through High-fidelity Simulation Samah Abdulwahed Ahmed Ali , PhD in Psychiatric and Mental Health. *Clinical Simulation in Nursing*, *64*, 24–30. https://doi.org/10.1016/j.ecns.2021.11.008

Azis et al.. (2023). The Role Of Majelis Taklim In Developing Religious Character Education On Al-Bahjah Cirebon. Edumasa : Jurnal Pendidikan Islam Edumasa : Jurnal Pendidikan Islam. *Edumasa: Jurnal Pendidikan Islam*, *1*, 1–12.

Badeni, B. (2021). Towards A Model Of Attitude And Character Learning Through Keyword S. *International Journal of Education and Practice*, *9*(3), 487–496. https://doi.org/10.18488/journal.61.2021.93.487.496

Balemen, N. (2018). The Effectiveness Of Project-Based Learning On Science Education : A Meta-Analysis Search. *International Online Journal of Education and Teaching (IOJET)*, *5*(4), 849–865.

Borenstein, M., Hedges, L., & Rothstein, H. (2007). *Introduction to Meta-Analysis*. www.Meta-

Analysis.com
Borenstein, M., & Hedges, L. V. (2009). *Introduction to Meta-Analysis Introduction*.
Chamdani et al. (2022). Meta-Analysis Study : The Relationship Between Reflective Thinking And Learning Achievement. *ERIES Journal*, *15*(3), 181–188.
Chimmalee, B., & Anupan, A. (2023). the Effects of Using Flipped Cloud Learning With Advancing Mathematical Thinking Approaches on Undergraduate Students' Mathematical Critical Thinking. *Turkish Online Journal of Distance Education*, *24*(3), 240–260. https://doi.org/10.17718/tojde.1125894
Denny, Y. R., Utami, I. S., Rohanah, S., & Muliyati, D. (2020). The Development of Blended Learning Model using Edmodo to Train Student Critical Thinking Skills on Impulse-Momentum Topic. *JPPPF (Jurnal Penelitian Dan Pengembangan Pendidikan Fisika)*, *6*(1), 113–120.
Dewanto, D., Wantu, H. M., Dwihapsari, Y., Santosa, T. A., & Agustina, I. (2023). Effectiveness of The Internet of Things (IoT)-Based Jigsaw Learning Model on Students' Creative Thinking Skills: A- Meta-Analysis. *Jurnal Penelitian Pendidikan IPA*, *9*(10), 912–920. https://doi.org/10.29303/jppipa.v9i10.4964
Diah et al. (2022). Meta-Analysis of Focusky Learning Media on Student Learning Outcomes. *International Journal Of Asian Education*, *3*(2), 20–22. https://doi.org/10.55943/jipmukjt.v3i2.34
Edy Nurtamam, M., Apra Santosa, T., Aprilisia, S., Rahman, A., & Suharyat, Y. (2023). Meta-analysis: The Effectiveness of Iot-Based Flipped Learning to Improve Students' Problem Solving Abilities. *Jurnal Edumaspul*, *7*(1), 2023–1492.
Elfira, I., & Santosa, T. A. (2023). Literature Study : Utilization of the PjBL Model in Science Education to Improve Creativity and Critical Thinking Skills. *Jurnal Penelitian Pendidikan IPA*, *9*(1), 133–143. https://doi.org/10.29303/jppipa.v9i1.2555
Fandhi, B., Satria, A., Kurniawan, D., & Chen, M. (2023). Heliyon Mediating effect of self-esteem on the relationship between academic self-efficacy and depression symptoms among nursing students participating in blended learning. *Heliyon*, *9*(11), e22526. https://doi.org/10.1016/j.heliyon.2023.e22526
Fauziyah, A. S., & Badrussalam, D. (2023). Implementation of Problem Solving Method To Improve Student ' s Critical Thinking In Islamic Religious Education Learning. *Jurnal Edumaspul*, *7*(2), 5166–5173.
Firdaus, R., & Fatah, B. (2013). Islamic Education: The Philosophy, Aim, and Main Features. *International Journal of Education and Research*, *1*(10), 1–18.
Fuji, M., & Renita, A. (2023). Elementaria : Journal of Educational Research Implementation of School Religious Activities in Forming Student Islamic Character Education. *Elementaria: Journal of Educational Research*, *1*(1), 28–41.
Glass, G. V. (1974). *Primary, Secondary, and Meta-Analysis of Research*.
Hamengkubuwono et al. (2016). The Effect of Teacher Collaboration as the Embodiment of Teacher Leadership on Educational Management Students' Critical Thinking Skills. *European Journal of Educational Research*, *11*(3), 1315–1326.
Hariyadi, S., Santosa, T. A., & Sakti, B. P. (2023). Effectiveness of STEM-Based Mind Mapping Learning Model to Improve Students ' Science Literacy in the Era of Revolution. *Jurnal Penelitian Pendidikan IPA*, *9*(10), 791–799. https://doi.org/10.29303/jppipa.v9i10.5125
Hasanah, H., Makassar, U. N., Street, A. P. P., Makassar, U. N., Street, A. P. P., Planning, H. E., & Board, C. (2020). Blended learning in improving students' critical thinking and communication skills at University. *Cypriot Journal of Educational Sciences*, *15*(5), 1295–1306.
Hasna, H. R., & Saputra, H. J. (2021). The Effect of Blended Learning Based on The Problem-Based Learning Model Assisted by Puzzle Media on The Critical Thinking Skills of Fifth Grade Students on Ecosystem Themes. *Journal of Education Technology*, *5*(1), 14–22.
Ichsan, I., Suharyat, Y., Santosa, T. A., & Satria, E. (2023). Effectiveness of STEM-Based Learning in Teaching 21 st Century Skills in Generation Z Student in Science Learning: A Meta-Analysis. *Jurnal Penelitian Pendidikan IPA*, *9*(1), 150–166. https://doi.org/10.29303/jppipa.v9i1.2517
Islam, S., Haolader, F. A., & Sharifa, M. (2023). Validation of scale and assessing blended learning readiness in the context of. *Heliyon*, *9*(1), e12766.

https://doi.org/10.1016/j.heliyon.2022.e12766

Jamaluddin, A. Bin, Zubaidah, S., Mahanal, S., Gofur, A., & Info, A. (2022). *Exploration of the Indonesian Makassar-Buginese Siri ' educational values : The foundation of character education*. *11*(1), 10–19. https://doi.org/10.11591/ijere.v11i1.21670

Jamilah, S. (2021). Moderate islamic education to enhance nationalism among Indonesian Islamic student organizations in the era of society 5.0. *Journal of Social Studies Education Research*, *12*(3), 79–100.

Janiszewski, M., Emlen, E., Connor, L. E. O., & Campbell, W. W. (2019). Meta-Analysis of Randomized Controlled Trials of Red Meat Consumption in Comparison With Various Comparison Diets on Cardiovascular Risk Factors. *Circulation*, 1828–1845. https://doi.org/10.1161/circulationaha.118.035225

Jehad, A., Alasad, J., & Amro, N. (2023). Heliyon Effectiveness of blended learning basic life support module on knowledge and skills : A systematic review of randomized controlled trials. *Heliyon*, *9*(11), e21680. https://doi.org/10.1016/j.heliyon.2023.e21680

Jiang, Y. (2022). Heliyon Evaluation of pedagogical impact of Business English textbooks on teaching critical thinking skills. *Heliyon*, *8*(October), e11419. https://doi.org/10.1016/j.heliyon.2022.e11419

Jou, M. (2021). Effect of a blended learning environment on student critical thinking and knowledge transformation. *Interactive Learning Environments*, *24*(6), 2016. https://doi.org/10.1080/10494820.2014.961485

Juandi, D., Kusumah, Y. S., Tamur, M., Perbowo, K. S., & Tanu, T. (2021). Heliyon A meta-analysis of Geogebra software decade of assisted mathematics learning : what to learn and where to go ? *Heliyon*, *7*(October 2020), e06953. https://doi.org/10.1016/j.heliyon.2021.e06953

Ko, Y., Lin, H., Chiang, W., Yang, C., Hsieh, M., & Ma, M. H. (2023). Journal of the Formosan Medical Association Comparing the effects of blended learning and traditional instruction on basic life support for laypersons : A randomized controlled trial. *Journal of the Formosan Medical Association*, *July*. https://doi.org/10.1016/j.jfma.2023.10.017

Komalasari, K., Indonesia, U. P., Maret, U. S., Indrawadi, J., & Padang, U. N. (2023). Value- based Blended Learning Model for Strengthening Students ' Character. *International Journal of Instruction*, *16*(4), 689–706.

Kurnanto, M. E., Sumin, S., Zuchdi, D., & Asmawi, S. (2023). Building Religious Character through Suluk on Multiethnic Students of Thariqah Al-Mu ' min Community in West Kalimantan. *DINAMIKA ILMU*, *23*(1), 135–156.

Lu, D. (2021). Students' Perceptions of a Blended Learning Environment to Promote Critical Thinking. *Frontiers in Psychology*, *12*(June), 1–9. https://doi.org/10.3389/fpsyg.2021.696845

Luciana, O., Sjoraida, D. F., Santosa, T. A., Nugraha, A. R., & Zain, A. (2024). The Effect of Technology-Based Management Learning on Children ' s Organizational Skills Development : A Meta-Analysis Approach. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *8*(6), 1777–1786. https://doi.org/10.31004/obsesi.v8i6.6593

Mahfudz, M., & Sukarno, S. (2023). The effect of ex-add learning techniques on critical thinking skills and pedagogic competence of Islamic education students. *Journal of Education and Learning*, *17*(2), 221–228. https://doi.org/10.11591/edulearn.v17i2.20782

Maison. (2022). International Journal of Educational Methodology How Critical Thinking Skills Influence Misconception in Electric Field. *International Journal of Educational Methodology Volume*, *8*(2), 377–390.

Marini et al. (2018). Managing School Based on Character Building in The Context of Religious School Culture (Case in Indonesia) Arita Marini 1 , Desy Safitri 2 & Iskandar Muda 3. *Journal of Social Studies Education Research*, *9*(4), 274–294.

Muhaemin et al. (2023). Religious Moderation in Islamic Religious Education as a Response to Intolerance Attitudes in Indonesian Educational Institutions. *Journal of Social Studies Education Research*, *14*(2), 253–274.

Muhajir, M., Syafrizal, S., & Nadhirah, Y. F. (2022). *Teaching Pronunciation and Islamic Education materials by Using Harry Potter Movie to Indonesian Students*. *18*(2), 1174–1184.

Öztürk, B., Kaya, M., & Demir, M. (2022). Does inquiry-based learning model improve learning outcomes? A second-order meta-analysis. *Journal of Pedagogical Research*, *6*(4), 201–216.

https://doi.org/10.33902/JPR.202217481
Palavan, Ö. (2020). The effect of critical thinking education on the critical thinking skills and the critical thinking dispositions of preservice teachers. *Educational Research and Reviews*, *15*(10), 606–627. https://doi.org/10.5897/err2020.4035
Primadoniati, A., Agama, I., Negeri, I., & Bone, I. (2020). Pengaruh Metode Pembelajaran Problem Based Learning Terhadap Peningkatan Hasil Belajar Pendidi- kan Agama Islam. *DIDAKTIKA*, *9*(1), 77–97.
Priyambodo, P., Paidi, P., Wilujeng, I., & Widowati, A. (2023). Ethno-ECLIPSE learning model: The bridge between collaboration and critical thinking skills. *Journal of Education and Learning (EduLearn)*, *17*(4), 575–588. https://doi.org/10.11591/edulearn.v17i4.20876
Radulović, B., Dorocki, M., Ninković, S. O., Stojanović, M., & Adamov, J. (2023). the Effects of Blended Learning Approach on Student Motivation for Learning Physics. *Journal of Baltic Science Education*, *22*(1), 73–82. https://doi.org/10.33225/jbse/23.22.73
Rahmatan, H., Artika, W., Ulfa, A., Pada, T., & Huda, I. (2022). The Effect of Applying Blended Learning Strategies Flipped Classroom Model on Students ' Critical Thinking Skills. *Jurnal Penelitian Pendidikan IPA*, *8*(1), 86–93. https://doi.org/10.29303/jppipa.v8i1.1186
Saekawati, R., & Nasrudin, H. (2021). Effectiveness of Guided Inquiry-Based on Blended Learning in Improving Critical Thinking Skills Efektivitas Inkuiri Terbimbing Berbasis Blended Learning dalam Meningkatkan Keterampilan Berpikir Kritis. *Jurnal Penelitian Ilmu Pendidikan*, *14*(1), 53–68.
Saihu et al. (2022). Multicultural Education Based on Religiosity to Enhance Social Harmonization within Students : A Study in Public Senior High School. *Pegem Journal of Education and Instruction*, *12*(3), 265–274. https://doi.org/10.47750/pegegog.12.03.28
Sari, L., & Siregar, B. (2021). Islamic Education : Factors that Affect Teachers in Building Student ' s Islamic Character. *International Journal of Asian Education*, *2*(4), 462–471.
Setiawan et al. (2022). Blended Learning and Student Mathematics Ability in Indonesia : A Meta-Analysis Study. *International Journal of Instruction*, *15*(2), 905–916.
Sunubi, A. H. (2022). Blended Learning Method in Enhancing Students ' Critical Thinking Skills : Challenges and Opportunities. *Al-Ishlah: JurnalPendidikan*, *14*, 6817–6824. https://doi.org/10.35445/alishlah.v14i4.2163
Suparjo et al. (2021). Developing Islamic Science Based Integrated Teaching Materials for Islamic Education in Islamic High School. *Pegem Journal of Education and Instruction*, *11*(4), 282–289. https://doi.org/10.47750/pegegog.11.04.27
Suparman, S., Juandi, D., & Tamur, M. (2021). Does Problem-Based Learning Enhance Students' Higher Order Thinking Skills in Mathematics Learning? A Systematic Review and Meta-Analysis. *ACM International Conference Proceeding Series*, *April*, 44–51. https://doi.org/10.1145/3451400.3451408
Suryono, W., Haryanto, B. B., Santosa, T. A., Suharyat, Y., & Sappaile, B. I. (2023). The Effect of The Blended Learning Model on Student Critical Thinking Skill : Meta-analysis. *Edumaspul - Jurnal Pendidikan*, *7*(1), 1386–1397.
Tamur et al. (2020). The Effectiveness of the Application of Mathematical Software in. *International Journal of Instruction*, *13*(4), 867–884.
Tamur, M., Fedi, S., Sennen, E., Marzuki, Nurjaman, A., & Ndiung, S. (2021). A meta-analysis of the last decade STEM implementation: What to learn and where to go. *Journal of Physics: Conference Series*, *1882*(1). https://doi.org/10.1088/1742-6596/1882/1/012082
Taufik, M., & Karawang, U. S. (2020). Strategic role of islamic religious education in strengthening character education in the era of industrial revolution 4.0. *Jurnal Ilmiah ISLAM FUTURA*, *20*(1), 86–104.
Timmermann, C., Prinds, C., Assing, E., Christian, N., Engelbrecht, M., & Ammentorp, J. (2023). Stimulating existential communication – fi rst steps towards enhancing health professionals ' re fl ective skills through blended learning. *PEC Innovation*, *2*(August 2022), 100121. https://doi.org/10.1016/j.pecinn.2023.100121
Tong, D. H., Uyen, B. P., & Ngan, L. K. (2022). Heliyon The effectiveness of blended learning on students ' academic achievement , self-study skills and learning attitudes : A quasi-experiment study in teaching the conventions for coordinates in the plane. *Heliyon*,

*8*(January), e12657. https://doi.org/10.1016/j.heliyon.2022.e12657

Utomo, W., Suryono, W., Santosa, T. A., & Agustina, I. (2023). The Effect of STEAM-Based Hybrid Based Learning Model on Students ' Critical Thinking Skills. *Jurnal Penelitian Pendidikan IPA*, *9*(9), 742–750. https://doi.org/10.29303/jppipa.v9i9.5147

Uyuni, B., & Adnan, M. (2021). The Challenge of Islamic Education in 21st Century The. *SALAM; Jurnal Sosial & Budaya Syar-I*, *7*(12), 1079–1098. https://doi.org/10.15408/sjsbs.v7i12.18291

Wantu, H. M., Muis, A., Zain, A., Hiola, S. F., Agustina, I., Santosa, T. A., Yastanti, U., & Nugraha, A. R. (2024). Effectiveness of Think-Pair-Share and STEM Models on Critical Thinking in Early Childhood Education. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *8*(5), 1320–1330. https://doi.org/10.31004/obsesi.v8i5.6202

Warsah, I., Morganna, R., Uyun, M., Afandi, M., Islam, U., Sultan, N., & Kasim, S. (2021). The Impact of Collaborative Learning on Learners ' Critical Thinking Skills. *International Journal of Instruction*, *14*(2), 443–460.

Wayan Santyasa, I., Agustini, K., & Eka Pratiwi, N. W. (2021). Project based e-learning and academic procrastination of students in learning chemistry. *International Journal of Instruction*, *14*(3), 909–928. https://doi.org/10.29333/iji.2021.14353a

Will Thaleimer & Samanta Cook. (2002). *How to Calculate Effect Size from Published Research Articles*. A Work-Learning Research Publication.

Yıldırım, E. (2022). The Effect of Drama Method on Academic Achievement and Attitude : A Comparative Meta-Analysis and Meta- Synthesis To cite this article : Yildirim , E . ( 2022 ). The effect of drama method on academic achievement and attitude : A The Effect of Drama Metho. *International Journal of Research in Education and Science 2022, 8*(1), 18–49.

Yıldırım, N. (2022). Argumentation-Based Teaching in Science Education: Meta- Analysis. *Education Quarterly Reviews*, *5*(2), 226–237. https://doi.org/10.31014/aior.1993.05.02.483

Yulitriana, Asi, N., Nugraha, R. F., & Fauzan, A. (2023). The Effect of Community Dialogue in Building Critical Thinking Skills in Essay Writing. *LEARN Journal: Language Education and Acquisition Research Network*, *16*(2), 348–365.

Yusop Boonsuk&, M. A. (2023). Teaching Management Strategies on 21 st Century Islamic Education for Southernmost. *Anatolian Journal of Education*, *8*(1), 13–28.

Zukmadini, Y. Y. and A. Y. (2021). Problem-based learning ( PBL ) and blended learning in improving critical thinking skills and student learning activities in biochemistry courses Problem-based learning ( PBL ) and blended learning in improving critical thinking skills and student learnin. *Journal of Physics: Conference Series*, *1731*, 1–7. https://doi.org/10.1088/1742-6596/1731/1/012007

Zulyusri, Santosa, T. A., Festiyed, Yerimadesi, Yohandri, Razak, A. (2023). Effectiveness of STEM Learning Based on Design Thiking in Improving Critical Thinking Skills in Science Learning : A. *Jurnal Penelitian Pendidikan IPA*, *9*(6), 112–119. https://doi.org/10.29303/jppipa.v9i6.3709